

WHAT IS CLAIMED IS:

1. A process for the hydrogenation and/or dehalogenation of  $\alpha$ -olefin to provide a substantially hydrogenated and/or substantially dehalogenated polyalphaolefin homo- or copolymer, the process comprising hydrogenating and/or dehalogenating at  
5 least one polymerized  $\alpha$ -olefin under catalytic hydrogenation and/or dehalogenation conditions in the presence of hydrogen and a catalytically effective amount of a substantially amorphous hydrogenation/dehalogenation catalyst comprising a metal component on an inorganic material based support.

10 2. The process of Claim 1 wherein the  $\alpha$ -olefin contains from 2 to about 20 carbon atoms.

3. The process of Claim 1 wherein the  $\alpha$ -olefin contains from about 6 to about 12 carbon atoms.

15 4. The process of Claim 1 wherein the  $\alpha$ -olefin is 1-decene.

5. The process of Claim 1 wherein the metal component of the catalyst is one or more Group VIII metals of the Periodic Table selected from the group consisting  
20 of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, and salts thereof.

6. The process of Claim 1 wherein the inorganic support is a material selected from the group consisting of silica, alumina and silica-alumina.

25 7. The process of Claim 1 wherein the amorphous hydrogenation/dehalogenation catalyst is palladium on a silica-alumina support.

8. A substantially hydrogenated and/or substantially dehalogenated polyalphaolefin homo- or copolymer obtained from the polymerization of at least one  $\alpha$ -olefin, the process comprising hydrogenating and/or dehalogenating the  $\alpha$ -olefin under catalytic hydrogenating and/or dehalogenating conditions in the presence of hydrogen and a catalytically effective amount of a substantially amorphous hydrogenating/dehalogenating catalyst comprising a metal component on an inorganic material based support.

9. The polyalphaolefin of Claim 8 wherein the  $\alpha$ -olefin contains from 2 to about 20 carbon atoms.

10. The polyalphaolefin of Claim 8 wherein the  $\alpha$ -olefin is selected from the group consisting of 1-octene, 1-decene, 1-dodecene and combinations thereof.

11. The polyalphaolefin of Claim 8 wherein the metal component of the catalyst is one or more Group VIII metals of the Periodic Table selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, and salts thereof.

12. The polyalphaolefin of Claim 8 wherein the inorganic support is a material selected from the group consisting of silica, alumina and silica-alumina.

13. The polyalphaolefin of Claim 8 wherein the amorphous hydrogenation/dehalogenation catalyst is palladium on a silica-alumina support.

14. The polyalphaolefin of Claim 8 possessing an iodine number of from about 0.5 to about 10.

15. The polyalphaolefin of Claim 8 possessing a halogen content of from about 1 to about 200 ppm.

16. The polyalphaolefin of Claim 8 possessing an iodine number of from about 0.5 to about 10 and a halogen content of from about 1 to about 200 ppm.

17. The polyalphaolefin of Claim 13 possessing an iodine number of from about 1 to about 8 and a halogen content of from about 3 to about 100 ppm.

18. A lubricating oil composition comprising a lubricating oil and a viscosity-modifying amount of the polyalphaolefin of Claim 8.

19. A lubricating oil composition comprising a lubricating oil and a viscosity-modifying amount of the polyalphaolefin of Claim 16.

20. A lubricating oil composition comprising a lubricating oil and a viscosity-modifying amount of the polyalphaolefin of Claim 17.